

2015-2016 ANNUAL REPORT

University at Buffalo Student Chapter Earthquake Engineering Research Institute

Report Date: May 06, 2016



This report summarizes the membership and activities conducted by the Student Chapter of the Earthquake Engineering Research Institute at the University at Buffalo (abbreviated as UB-EERI Student Chapter) during the academic year 2015-2016.

MISSION & GOALS

The mission of UB-EERI Student Chapter is to build a community of students and professionals. Social activities are supported among the student chapter, bringing together students with similar career objectives and interests and thus allowing a space for lifelong friendships to form. Networking events with engineering professionals can also bridge the gap between the UB-EERI Student Chapter and the greater EERI community. Our goals include reaching out, beyond the research lab and classroom, to give back to our local community. Finally, direct volunteer efforts that specifically use our talents as engineers, in addition to fundraising efforts, are undertaken to positively affect the community.

AFFILIATION

The UB-EERI Student Chapter is headquartered at the Department of Civil, Structural, and Environmental Engineering at the University at Buffalo. The parent organization of the UB-EERI Student Chapter is the Earthquake Engineering Research Institute. This student chapter is also recognized as a Special Interest Club by the Graduate Student Association of University at Buffalo.

CONTACT ADDRESS

Primary Address:

UB-EERI Student Chapter
212 Ketter Hall
Department of Civil, Structural and Environmental Engineering
University at Buffalo
Buffalo, NY 14260-4300, USA.

Secondary Address:

UB-EERI Student Chapter
310 Student Union
Box 602100
Buffalo, NY 14260-2100, USA.

WEBSITE

The website of UB-EERI Student Chapter presents abstracts, pictures, additional links and materials regarding all the activities. Please visit the website to learn more about each of the

activities listed in this report. The link to UB-EERI Student Chapter's webpage is <http://gsa.buffalo.edu/eeri/>

MEMBERSHIP

OFFICERS

The 2015-2016 Executive Committee of UB-EERI Student Chapter consists of graduate students from the Department of Civil, Structural, and Environmental Engineering, Department of Mechanical and Aerospace Engineering, and Department of Political Science. Detailed information about the officers is provided below.



Basit Qayyum
President
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Kundan Goswami
Vice-President
Email: kundango@buffalo.edu



Shoma Kitayama
Treasurer
Email: shomakit@buffalo.edu



Joshua Reichardt
Secretary
Email: jgreicha@buffalo.edu



Alok Deshpande
Senator
Email: alokabha@buffalo.edu



Reda Snaiki
Senator
Email: redasnai@buffalo.edu



Mojeeburahman Mashal
Senator (Fall 2015)



Ahmad Hamidy
Senator
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Neeraj Gandhi
Webmaster
Email: neerajga@buffalo.edu

FACULTY ADVISOR

Dr. Michel Bruneau

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Department of Civil, Structural and Environmental Engineering
University at Buffalo
NY 14260-4300, USA.

Email: bruneau@buffalo.edu
Website: <http://www.eng.buffalo.edu/~bruneau/>



MEMBERS

The UB-EERI Student Chapter had a total of 39 members in 2015-2016. The majority of the members are registered students in the Department of Civil, Structural and Environmental Engineering (CSEE). Other members are registered students in the Department of Mechanical and Aerospace Engineering (MAE), Department of Electrical Engineering (EE), Department of Industrial and Systems Engineering (ISE), Department of Chemical and Biological Engineering (CBE), Department of Political Science, Department of Physics, Department of Biostatistics, Department of Sociology, Department of English, and Department of Management and Accounting. A complete list of the members is presented below.

First Name	Last Name	EERI ID	Department
Abhishek	Venketeswaran	-	MAE
Ahmad	Hamidy	18203	CSEE
Aikaterini	Stefanaki	14748	CSEE
Ali	Alsaqqa	-	Physics
Alireza	Farasat	-	ISE
Alok	Deshpande	18171	CSEE
Arpan	Mukherjee	-	MAE
Basit	Qayyum	16993	CSEE
Casey	Bunce	18683	CSEE
Damian	Andreani	17448	CSEE
Donghun	Lee	18303	CSEE
Enrique	Morales	14441	CSEE
Georgia	Angelki	-	Biostatistics
Georgios	Skivvanitis	-	EE
Huseyin	Cilsalar	18302	CSEE
Ioannis	Karampelas	-	CBE
Jack	Kennedy	17456	CSEE
Joseph	Colletti	18301	CSEE
Joshua	Reichardt	17605	Political Science
Katelin	Selby	18682	CSEE
Kundan	Goswami	17472	MAE
Laura	Pavone	17767	CSEE
Manish	Kumar	15868	CSEE
Mark	Hare	17200	CSEE
Maryam	Tahir	18685	CSEE
Matthew	Itzler	18678	CSEE
Melis	Kural	-	Sociology
Mohammadreza	Samadi	-	ISE
Mojeeburahman	Mashal	-	CSEE
Neeraj	Gandhi	18207	CSEE
Nikolaos	Tsagkarakis	-	EE
Panagiotis	Markopoulos	-	EE
Panagiotis	Mistriotis	-	CBE

First Name	Last Name	EERI ID	Department
Reda	Snaiki	18205	CSEE
Sarah	Ishfaq	-	English
Shoma	Kitayama	18210	CSEE
Simon	Wolfling	18687	CSEE
Vangjel	Jorgali	-	Mg-Accounting
Venkata	Panthangi	18300	CSEE

BUDGET & FINANCIALS

The budgetary details of the UB-EERI Student Chapter are presented below for the academic year 2015-2016.

Sponsor / Event	Amount (USD)
Graduate Student Association	+ 300.00
Earthquake Engineering Research Institute	+ 400.00
Introductory Annual Meeting	- 30.00
Graduate Student Association	+ 300.00
Engineering Seminar by Dr. Michael Pollino	- 90.09
Engineering Workshop on SAP2000 by Dr. Manish Kumar	- 70.48
Engineering Seminar by Prof. Robert Olshansky	- 189.43
Voluntary Trip to Habitat for Humanity Buffalo	- 72.64
Annual Journal Discussion Session and Dinner	- 453.56
Technical Trip to Taylor Devices Inc.	- 51.31
Engineering Seminar by Dr. Andreas Stavridis	- 0.00

Total Amount Available: \$ 42.49

CHAPTER ACTIVITIES

Introductory Annual Meeting

A meeting was held on 2nd of October 2015 to introduce the mission and goals of the UB-EERI Student Chapter to the new members. Students across various departments of the university were invited for this meeting. The club officers for the year 2015-2016 introduced themselves to the new members. An initial plan of the events to be organized throughout the year was also discussed.

Regular Chapter Meetings

The officers of the UB-EERI Student Chapter met biweekly to discuss and plan events throughout the semesters. The details of the various events organized by UB-EERI Student Chapter during the academic year 2015-2016 are presented next.

Engineering Seminar by Dr. Michael Pollino on 4th March 2016

Dr. Pollino visited UB on 4th March 2016 to present his talk on “Seismic Rehabilitation of Sub-standard Steel Concentrically Braced Frame”. Students and faculty from the civil engineering department attended the event. The students taking steel design courses were greatly benefited from the lecture. Students were also given the opportunity to meet Dr. Pollino in person. A lunch was also organized where students, faculty and Dr. Pollino carried a healthy conversation.



Fig. 1: Dr. Pollino delivering a talk on Seismic Rehabilitation of Sub-standard Steel Concentrically Braced Frame Buildings.



Fig. 2: Some of the attendees with Dr. Pollino after his talk.

Engineering Workshop on SAP2000 by Dr. Manish Kumar on 11th March 2016

Post-doctoral researcher, Dr. Manish Kumar, gave a workshop presentation on Performing Nonlinear Analysis in SAP2000 on March 11, 2016. Students from CSEE department attended the event. The workshop provided a hands-on experience on using SAP2000 for estimating response of structures subject to dynamic loads. Simple examples were used to illustrate the steps involved in performing nonlinear analysis in SAP2000 to capture nonlinear behavior of structure and their effects on structural response.



Fig. 3: Dr. Manish Kumar conducting a hands-on workshop on Nonlinear Dynamic Analysis in SAP2000.



Fig. 4: Attendees hard at work at the SAP2000 workshop.

Engineering Seminar by 2015 EERI Distinguished Lecturer Prof. Robert Olshansky on 25th March 2016

EERI Distinguished Lecturer for 2015, Prof. Robert Olshansky visited UB on 25th March 2016 to present his talk on “Cities, Earthquakes and Time”. Students and faculty from many departments across the campus, including the Departments of Civil Engineering, Mechanical Engineering and Urban Planning attended the event. Prof. Olshansky engaged the audience with a lively discussion on the socio-economic factors affecting rebuilding efforts in addition to providing guidelines on building resilient infrastructure. The chapter also organized a meeting of some of the faculty in the Department of Civil Engineering with the speaker in addition to a tour of the Structural Engineering laboratory. Members of the chapter were joined by Prof. Bruneau and Dr. Khorasani for lunch with the speaker.



Fig. 5: Prof. Olshansky delivering the EERI Distinguished Lecture at UB on 25th March 2016.



Fig. 6: Some of the attendees with Prof. Olshansky after his seminar.

Voluntary Trip to Habitat for Humanity Buffalo on 2nd April 2016

Habitat for Humanity Buffalo is a non-profit charitable organization seeking to alleviate the shortage of quality affordable housing in Buffalo, New York. Through voluntary labor we joined their activity in rehabilitating a residential house located in 65 Sirret St, Buffalo, NY 14220 on 2nd of April 2016. Eight graduate students volunteered for the event.



Fig. 7: The workplace at 65 Sirret St. Buffalo.



Fig. 8: UB-EERI volunteers with Chuck from Habitat for Humanity at 65 Sirret St. Buffalo.

Annual Journal Discussion Session and Dinner on 23rd April 2016

UB-EERI Student Chapter organized a joint event on 23rd April 2016 – (i) Journal paper review and discussion and (ii) Annual dinner party. Some members of the UB-EERI Student Chapter reviewed few papers recently published in Earthquake Spectra and discussed the possible future directions among themselves. The paper reviews are attached at the end of the report. On the same day a Dinner party was organized to celebrate the success of the Student Chapter. The UB-EERI members and their families socialized among themselves during the dinner party.



Fig. 9: UB-EERI members socializing among themselves during the Annual Dinner.



Fig. 10: UB-EERI members with their family at the Annual Dinner.

Technical Trip to Taylor Devices on 25th April 2016

The chapter organized a field trip to the offices of Taylor Devices Inc. in Buffalo on 25th of April 2016 to learn more about the design, manufacturing and applications of fluid viscous dampers. Mr. Douglas Taylor, the Chief Executive Officer of the firm, gave a very engaging presentation on the development and application of dampers to structures, followed by a very lively guided tour of the manufacturing facilities and testing apparatus. Dr. Lydell Wiebe and students from McMaster University, Canada also joined the group of students from University at Buffalo for this trip.



Fig. 11: Mr. Douglas Taylor explaining principles of manufacturing and testing Fluid Dampers.



Fig. 12: Attendees from UB-EERI and McMaster University with Mr. Taylor and team.

Engineering Seminar by Dr. Andreas Stavridis on 3rd May 2016

Dr. Stavridis delivered a presentation on “Findings of a Reconnaissance Trip Following the 2015 Nepal Earthquake” on 3rd May 2016. Dr. Stavridis and his students visited Nepal to inspect structural damage from the M7.8 Ghorka Earthquake that struck Nepal on April 25, 2015. Dr. Stavridis presented several graphics showing the damage as well as poor construction and design methodology being practiced in Nepal. Numerical models, based on the data collected, to assess damage were also presented and discussed. Students and faculty from the Civil Engineering department attended the seminar.



Fig. 13: Dr. Stavridis delivering a talk on Findings of a Reconnaissance Trip Following the 2015 Nepal Earthquake.



Fig. 14: Some of the attendees with Dr. Stavridis after his seminar.

ELECTION

Election for the academic year 2016-2017 will be held at the beginning of the Fall 2016 semester in order to provide an opportunity for the incoming graduate students to participate.

LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information mentioned above. A list of the attachments is provided below:

- Item 1 – Flier for Introductory Annual Meeting
- Item 2 – Flier for Engineering Seminar by Dr. Michael Pollino
- Item 3 – Flier for Engineering Workshop on SAP2000 by Dr. Manish Kumar
- Item 4 – Flier for Seminar by the 2015 EERI Distinguished Lecturer Prof. Robert Olshansky
- Item 5 – Flier for Voluntary Trip to Habitat for Humanity Buffalo
- Item 5 – Flier for Annual Journal Discussion Session and Dinner
- Item 7 – Flier for Technical Trip to Taylor Devices
- Item 8 – Flier for Engineering Seminar by Dr. Andreas Stavridis
- Item 9 – Journal Paper Review 1 by Shoma Kitayama
- Item 10 – Journal Paper Review 2 by Shoma Kitayama
- Item 11 – Journal Paper Review by Basit Qayyum
- Item 12 – Journal Paper Review by Reda Snaiki
- Item 13 – Journal Paper Review by Alok Deshpande
- Item 14 – Journal Paper Review by Kundan Goswami

UB-EERI Student Chapter Annual Meeting

Date: 10-02-2015

Time: 12:30 PM

Venue: 140 Ketter Hall

Earthquake Risk: Failure

Structural System



Mechanical System



Electrical System



Socio-Economic Impact

	Economic loss* (in Billion \$)	Fatalities (in Thousand)
Japan 2011	220	15.9
Japan 1995	159.5	5.5
Sichuan 2008	91.8	88
Southern California 1994	70.4	0.06
Southern Italy 1980	50.6	4.7
Japan 2004	34.3	0.04
Chile 2010	32.4	0.5





DEPARTMENT OF CIVIL, STRUCTURAL
AND ENVIRONMENTAL ENGINEERING



CSEE GRADUATE STUDENT ASSOCIATION



ENGINEERING SEMINAR

Seismic Rehabilitation of Sub-standard Steel Concentrically Braced Frame Buildings Using Stiff Elastic Cores

Abstract: Seismic design of multi-story buildings requires capacity design principles that allow for distributed damage through plastic member deformations over the building height while preventing concentrated, soft-story failure mechanisms that may lead to building collapse. Evaluation of braced frame buildings designed to modern and historic seismic design codes has revealed that such buildings may not meet desirable performance objectives or may collapse during either design-basis or maximum considered earthquake hazards. Poor performance in modernly designed braced frame buildings appears likely due to improper consideration of the brace strength degradation while older buildings fail due to undesirable, non-ductile failure modes of members or connections. This research investigates a rehabilitation approach for existing buildings that uses a stiff (elastic) rocking core (SRC) to redistribute plastic deformations along the frame's height which can also provide supplemental strength and stiffness to the existing frame by including steel yielding links. The rehabilitation approach is intended to be non-intrusive for buildings in-service while also attempting to limit the structural forces to existing members and the foundation. An improved design procedure for braced frame columns is also proposed for design of new CBF buildings. Various frame designs representing modernly designed, older non-ductile, rehabilitated, 3-story, and 6-story frames were evaluated using nonlinear transient seismic analysis and large-scale hybrid experimental testing. Predictive, analytical, and experimental response results show reasonable agreement, and the proposed rehabilitative technique is believed to be cost-effective and reliable for preventing soft-story collapse and achieving desirable performance levels in low-to-mid-rise steel braced frame structures.



Michael Pollino, Ph.D., S.E., P.E.

Assistant Professor, Dept. of Civil Engineering, Case Western Reserve University

Michael Pollino is currently an assistant professor in the Dept. of Civil Engineering at Case Western Reserve University (CWRU) in Cleveland, Ohio. His research seeks to develop structural members, connections, and systems for enhanced resiliency and sustainability under various hazards including earthquakes. Other ongoing research projects include seismic isolation and passive control of steel storage racks and structural monitoring of wind turbines. He was awarded the AISC Milek Fellowship in 2014 to support his research related to multi-hazard design of steel buildings and is a member of the ASCE Seismic Effects and Multi-Hazard Mitigation technical committees. He teaches courses in structural analysis and design, civil engineering materials, and dynamics and has been awarded a teaching fellowship and instructional support grant by CWRU to support his teaching methods which include active learning and experiential activities.

Date: March 4, 2016

Time: 12:00 Noon

**Location: 140 Ketter Hall, North Campus,
University at Buffalo**

Refreshments will be served!



Workshop on Performing Nonlinear Dynamic Analysis in SAP2000

The SAP2000 software program by Computers and Structures, Inc. (CSI) is an efficient tool for analyzing structures subject to static and dynamic loads. A friendly graphical user-interface and options to include parameters directly from engineering codes and guidelines makes it a widely accepted tool.

This workshop will provide a hands-on experience on using SAP2000 for estimating response of structures subject to dynamic loads. A simple steel moment-frame structure will be used to demonstrate steps involved in performing modal, pushover, response-spectrum, and response time-history analyses. Different options available in SAP2000 to capture nonlinear behavior of structure and their effects on structural response will also be discussed.



Manish Kumar, Ph.D., P.E.

Post-doctoral Associate, University at Buffalo, USA

Manish Kumar is a post-doctoral researcher at University at Buffalo. His research interest lies in the theoretical and experimental work to address issues related to analysis and design of structures subject to seismic, blast and impact loads. He received Bachelor's degree in Civil Engineering from IIT Kanpur and his Master's and Ph.D. degrees from University at Buffalo. His Ph.D. research focused on investigation of the feasibility of seismic isolation technology to nuclear power plants (NPPs). As a post-doctoral researcher, he is investigating the effect of aircraft-impact on base-isolated NPPs. He is also licensed as a Civil Engineer (P.E.) in the state of California. He has developed several open-source modules in software programs like OpenSees, ABAQUS and LS-DYNA. He has previously conducted hands-on workshops on using software programs like OpenSees, Air3D and LS-DYNA.

Date: March 11, 2016

Time: 10:30 AM

Location: 208 Ketter Hall, North Campus,
University at Buffalo

*Seats are limited to 30 and available on first come first serve basis.
Please register by sending an email to kundango@buffalo.edu with
(1) Title: "SAP2000 Workshop" and (2) Your Full Name*

You can check for upcoming events here: <http://gsa.buffalo.edu/eeri/activities/>



ENGINEERING SEMINAR



Cities, Earthquakes, and Time

Abstract: Earthquakes occur suddenly, in a brief instant of time. But their effects — and the actions we take to reduce their effects — stretch over many years. In this talk, I explore some of the characteristics of the relationship between earthquakes and time. More importantly, I explain how these various time characteristics affect policy decisions. I draw four policy conclusions from this rumination on time, relating to: mitigation, speed and quality of recovery, planning for resilience, and construction standards.



Robert Olshansky, Ph.D., FAICP
Professor and Head, Dept. of Urban and Regional Planning
University of Illinois at Urbana-Champaign

Robert Olshansky's (M. EERI, 1987) research and 25 years of teaching cover land use and environmental planning, with an emphasis on planning for natural hazards. He has extensively studied recovery planning and management after several major disasters across various countries including China, India, Japan, Indonesia and Haiti. His expertise in disaster management and planning has been honored by naming him as the EERI Distinguished Speaker for 2015. The EERI Distinguished Lecture Award is given to members of the Institute to recognize and encourage communication of outstanding professional contributions of major importance for earthquake hazard mitigation.

Date: March 25, 2016

Time: 10:30 AM

Location: 140 Ketter Hall, North Campus,
University at Buffalo

Refreshments will be served!

You can check for upcoming events here: <http://gsa.buffalo.edu/eeri/activities/>



VOLUNTARY TRIP



Habitat for Humanity Buffalo

Habitat for Humanity Buffalo is a non-profit charitable organization seeking to alleviate the shortage of quality affordable housing in Buffalo, New York. Through volunteer labor and tax-deductible donations of money, land, and materials, the organization builds or rehabilitates simple, decent houses.



Founded in 1985, Habitat for Humanity Buffalo built its 100th house in 2002 and 200th house in 2009. The organization has provided home ownership for 999 people including 651 children. Families are selected based on their level of need, willingness to work, acceptance of responsibilities and ability to repay mortgage. To volunteer for Habitat for Humanity Buffalo or

to obtain more information please visit www.habitatbuffalo.org.

Date: April 02, 2016

Location: 65 Sirret St, Buffalo, NY 14220

Time: 08:45 AM

Conveyance: Carpool (8 AM from UB South)

Seats are limited to 4 and available on first come first serve basis.

*Please register by sending an email to kundango@buffalo.edu with
(1) Title: “Habitat for Humanity Trip” and (2) Your Full Name*

You can check for upcoming events here: <http://gsa.buffalo.edu/eeri/activities/>



TECHNICAL SESSION AND SOCIAL HOUR



Annual Journal Discussion Session and Dinner Party



Date: April 23, 2016

Time: 06:30 PM

Location: Hadley Village Community Center, UB North Campus

You can check for upcoming events here: <http://gsa.buffalo.edu/eeri/activities/>



TECHNICAL TRIP



Taylor Devices Inc.



Taylor Devices Inc. is a globally reputed company in the area of shock and vibration control (<http://www.taylordevices.com>). The trip to Taylor Devices will provide an opportunity to see the manufacturing and testing processes of full scale shock absorbers and passive dampers.

Date: April 25, 2016

Time: 02:30 PM

Location: 90 Taylor Drive, North Tonawanda, NY 14120

Conveyance: Carpool (from Ketter Lot, UB North Campus)

You can check for upcoming events here: <http://gsa.buffalo.edu/eeri/activities/>



ENGINEERING SEMINAR



Findings of a Reconnaissance Trip Following the 2015 Nepal Earthquake



Abstract: The M7.8 Ghoroka Earthquake struck Nepal on April 25, 2015. This earthquake and its aftershocks had a significant impact on the urban and rural areas in the country causing more than 9,000 human losses, as well as widespread ground failure that prevented speedy recovery in many affected regions. The seismic sequence also caused extensive structural damage to the building stock that consists of low- to mid-rise reinforced concrete and masonry structures.

This presentation will discuss the findings of a reconnaissance team that visited Nepal shortly after the main shock in June 2015. The UB team collaborated with researchers from universities in the US and Europe, as well Nepalese researchers to document damage and collect perishable architectural and structural data. Data were obtained through traditional methods as well as 3D ground-based LiDAR scans. Moreover, ambient vibration recordings from selected damaged structures were obtained and are used in developing and validating numerical models and damage assessment algorithms which will be discussed.

Speaker Bio: Andreas Stavridis is an Assistant Professor in the Department of Civil, Structural and Environmental Engineering at the University at Buffalo. He obtained his Diploma in Civil Engineering in 2002 from the National Technical University of Athens. He earned his MSc and PhD in Structural Engineering in 2004 and 2009 from the University of California, San Diego. His current research focuses on assessing and improving the seismic performance of existing concrete and masonry structures as well as improving the design guidelines for new construction using computational simulations as well as large-scale quasi-static and dynamic tests. He is a member of EERI, ASCE, ACI, and The Masonry Society, and a member of the ACI 369 and the ASCE 41 masonry committee.

Date: May 03, 2016

Time: 11:00 AM

Location: 140 Ketter Hall, North Campus,
University at Buffalo

Article Title	A Framework for Linking Community-Resilience Goals to Specific Performance Targets for the Built Environment
Authors	Michael Mieler, Bozidar Stojadinovic, Robert Budnitz, Mary Comerio, and Stephen Mahin
Volume No.	31
Issue No.	3
Journal	Earthquake Spectra
Pages	1267–1283
Reviewed By	Shoma Kitayama
Designation	PhD Student in the Department of Civil, Structural, and Environmental Engineering
Organization	University at Buffalo
<p>Major Contributions:</p> <p>(1) A conceptual framework that can be used to explicitly link community-level resilience goals to specific design targets for individual systems and components within the built environment was proposed.</p> <p>(2) A consistent performance target for individual residential buildings from a community-level resilience goal was derived.</p> <p>(3) Potential applications of the proposed framework, including a critical evaluation of current building codes to verify whether their target performance objectives are compatible with community-level resilience goals was presented.</p>	
<p>Possible Future Directions:</p> <p>(1) Further Recovery data collected in the aftermath of earthquakes and other disasters can be used both to calibrate and improve the presented framework.</p> <p>(2) While the proof-of-concept example presented in this paper has focused on developing a performance target for individual residential buildings, the proposed methodology can be employed to establish performance targets for additional components and systems within the built environment, including hospitals, office buildings, schools, and lifeline systems like electricity, gas, water, and wastewater.</p>	

Article Title	Provisions for the Seismic Risk Evaluation of Existing Reinforced Concrete Buildings in Turkey under the Urban Renewal Law
Authors	Baris Binici, Ahmet Yakut, Guney Ozcebe, and Atila Erenlerc
Volume No.	31
Issue No.	3
Journal	Earthquake Spectra
Pages	1353–1370
Reviewed By	Shoma Kitayama
Designation	PhD Student in the Department of Civil, Structural, and Environmental Engineering
Organization	University at Buffalo
Major Contributions:	
<p>(1) Technical provisions for seismic risk assessment in Turkey are presented.</p> <p>(2) A simple procedure to consider the beneficial presence of infill walls at low deformations is presented.</p> <p>(3) Results of example application of seismic risk assessment are given for case study buildings.</p>	
Possible Future Directions:	
<p>(1) The number of buildings in Turkey to be examined in the next ten years is estimated to be on the order of 5 million, thus the process of this assessment would be reviewed later.</p> <p>(2) The committee decided to employ linear elastic procedures for seismic assessment, thus the possible limitation of this assessment may be examined later.</p>	

Article Title	Experimental Shake Table Testing of an Adaptive Passive Negative Stiffness Device within a Highway Bridge Model
Authors	Navid Attary, Michael Symans, Satish Nagarajaiah, Andrei M. Reinhorn, Michael C. Constantinou, Apostolos A. Sarlis, Dharma T. R. Pasala, and Douglas P. Taylor
Volume No.	31
Issue No.	4
Journal	Earthquake Spectra
Pages	2163-2194
Reviewed By	Basit Qayyum
Designation	PhD Student in the Department of Civil, Structural, and Environmental Engineering
Organization	University at Buffalo
<p>Major Contributions:</p> <p>(1) The concept of negative stiffness was utilized in a bridge structure via the implementation of a negative stiffness device (NSD).</p> <p>(2) The NSD was installed in a bridge structure and its performance under seismic loading was evaluated.</p> <p>(3) The performance of NSD was compared with other types of seismic response modification devices (SRMDs) such as elastomeric bearings and fluid viscous dampers.</p>	
<p>Possible Future Directions:</p> <p>(1) The NSD has no practical implementation in structures, as of yet. A challenge is to scale the device for larger configurations along with other types of SRMDs.</p> <p>(2) Since NSD is a new technology, it does not have any design and implementation methodology in seismic design codes.</p>	

Article Title	Quintuple Friction Pendulum Isolator-Behavior, Modeling and Validation
Authors	Donghun Lee and Michael C. Constantinou
Volume No.	-
Issue No.	-
Journal	Earthquake Spectra
doi	http://dx.doi.org/10.1193/040615EQS053M
Reviewed By	Reda Snaiki
Designation	PhD Student in the Department of Civil, Structural, and Environmental Engineering
Organization	University at Buffalo
Major Contributions:	
<ul style="list-style-type: none"> (1) Behavior of the Quintuple Friction Pendulum isolator (2) Analytical model for the Quintuple Friction Pendulum isolator in two general configurations of geometric and frictional properties (3) Computational model that can be implemented in SAP2000 	
Possible Future Directions:	
<ul style="list-style-type: none"> (1) Model validation under tri-axial shake table testing or multi-directional motion testing of individual isolators since the computational model is inherently tri-axial (2) Comparison of the triple and Quintuple Friction Pendulum Isolator in terms of cost-benefit and performance for standard structures. 	

Article Title	Development of Collapse Indicators for Risk Assessment of Older-Type Reinforced Concrete Buildings
Authors	Panagiotis H. Galanis and Jack P. Moehle
Volume No.	31
Issue No.	4
Journal	Earthquake Spectra
Pages	1991-2006
Reviewed By	Alok Deshpande
Designation	Graduate Student in the Department of Civil, Structural and Environmental Engineering
Organization	University at Buffalo
<p>Major Contributions:</p> <p>(1) Characteristics correlating with high collapse risk are identified.</p> <p>(2) Parameters considered – Column/Beam strength ratio, Column shear demand/capacity and number of stories</p> <p>(3) The column/beam strength ratio is not high enough to push the beam mechanism up to all floors – it is concentrated in the lower quarter height for 1.2 (current ACI value).</p> <p>(4) Taller frames are more likely to collapse because of P-delta effects and concentration of damage in the lower stories.</p>	
<p>Possible Future Directions:</p> <p>(1) Inclusion of irregular frames and torsion.</p> <p>(2) Assess efficacy of the methodology by applying to existing buildings.</p>	

Article Title	A Beta Distribution Model for Characterizing Earthquake Damage State Distribution
Authors	David Lallemand and Anne Kiremidjian
Volume No.	31
Issue No.	3
Journal	Earthquake Spectra
Pages	1337–1352
Reviewed By	Kundan Goswami
Designation	PhD Student in the Department of Mechanical and Aerospace Engineering
Organization	University at Buffalo
<p>Major Contributions:</p> <p>(1) A comparison between Beta distribution and Binomial distribution (Braga model) for probabilistic characterization of earthquake damage states has been presented using damage data from the Haiti 2010 earthquake.</p> <p>(2) The Beta distribution introduces less error in capturing the damage states, thereby emerging as a better model for earthquake damage probability distribution.</p>	
<p>Possible Future Directions:</p> <p>(1) Mathematical formulations can be developed that collectively map the various damage features of a building to a number on the real line between 0 and 1. This will eliminate the need of latent variable as well as the observed data will be distributed over $[0,1]$ instead of certain discrete points.</p> <p>(2) Family of probability distribution functions with more shape parameters can be introduced to capture the multi-modal damage distributions. A trade-off between the number of shape parameters and total number of parameters to be estimated can be achieved on the basis of performance of such distribution functions.</p> <p>(3) Generalized extreme value distributions can be applied towards probabilistic characterization of building collapse rate. This can be compared against the Beta distribution for performance evaluation of these extreme value distributions.</p>	